

THIS ARTIFICIAL RETINA COULD REVOLUTIONIZE THE WAY WE TREAT SIGHT LOSS

Alper Çerençe, Gazzavi-Rogozina L.V., Dyomina Ye.V., Filiptsova O.V.

Scientific supervisor: Filiptsova O.V.

National University of Pharmacy, Kharkov, Ukraine

alper1863@windowslive.com

Introduction: Damaged retina is often something many people have to live with it for the rest of their life. It leaves them with reduced sight or even blindness.

Even those that don't suffer from an injury can suffer from an unfortunate condition where their retina's photoreceptor cells die off, and their sight slowly deteriorates over time.

Aim: to alleviate the problems associated with a damaged or defective retina. A cybernetic replacement of retina.

Materials and Method: made of sandwich of a thin layer of electrically conductive polymer, a silk based substrate, and a semi-conductin polymer, it's able to absorb photons when light sneaks in through the eye's pupil.

The photons generate an electrical current, and make their way to the back of the device and into the retinal neurons within the optic nerve. This device inserted into rats eyes. The team tested their pupil's responses under a variety of low-light condition.

Results and discussion: under very low-light conditions resembling that of a full moon, the rats with implants were no more responsive than rats with damaged retinas lacking the artificial retina.

However, when conditions similar to a sky at twilight arose, the augmented rat's pupillary response were essentially no different from that of healthy rats with perfectly working retinas.

Conclusion: the implant was successful for 10 months. But this experiment was a bit of shot in the dark - at this point, it's not clear how clear an image the rats with the artificial retinas are able to process, nor is it certain how the device even works on a biological level.

Nevertheless, with human trials likely to follow suit later this year, it's a remarkable step in the right direction to restoring sight to those that have lost or are losing it.